Five-Year Review Report

for

Wade (ABM) Superfund Site
City of Chester
Delaware County, Pennsylvania

2009

Prepared By:
Environmental Protection Agency
Philadelphia, PA

Approved By:

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EPA, Region III

Date: 9/25/09

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Wade (ABM) Five-Year Review
Superfund Site

List of Acronyms

ARARs	Applicable or relevant and appropriate requirements
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CLP	Contract Laboratory Program
COC	Contaminant of Concern
COE	U.S. Army Corps of Engineers
DOJ	U.S. Department of Justice
EPA	Environmental Protection Agency
ESD	Explanation of Significant Differences
FFS	Focused Feasibility Study
HDPE	High Density Polyethylene
MCL	Maximum Contaminant Level
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
O&M	Operations and Maintenance
OU	Operable Unit
PADEP	Pennsylvania Department of Environmental Protection
PADER	Pennsylvania Department of Environmental Resources
PRP	Potentially Responsible Party
RA	Remedial Action
RAO	Remedial Action Objective
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RP	Responsible Party
RPM	Remedial Project Manager
TAL	Target Analyte List
TBC	To Be Considered
TCE	Trichloroethene
PCE	Tetrachloroethene (also "Perchloroethylene")
PPA	Prospective Purchaser Agreement
TCL	Target Compound List
UAO	Unilateral Administrative Order

Executive Summary

The United States Environmental Protection Agency (EPA) issued a final Record of Decision (ROD) for the Wade ABM Superfund Site in August, 1984. The Pennsylvania Department of Environmental Resources (PADER – this department is now named Pennsylvania Department of Environmental Protection or PADEP) concurred with the ROD and was given the status of lead-agency to remediate the Site.

The ROD required the demolition and removal of fire-damaged buildings, excavation of contaminated soil to a maximum depth of five feet, removal and disposal of that soil, backfilling, regrading and contouring the Site with imported fill and covering the entire Site with a vegetated topsoil cap. The selected remedial action also required the installation of a security fence and the implementation of a long term Operation and Maintenance (O&M) program consisting of annual groundwater monitoring and Site inspections along with maintenance of the fence and cap as necessary. As the lead agency, PADER conducted the remedial actions and also agreed to conduct the O&M on a yearly basis beginning in 1989.

The assessment of this Five-Year Review found that the remedy was constructed and continues to operate in accordance with the requirements of the ROD. The annual groundwater monitoring has been conducted in accordance with the ROD, and continues to show that the remedy is functioning as designed with no issues which would compromise the protectiveness of human health and the environment. Because the constructed remedy continues to function as intended by the ROD, the Site remains protective of human health and the environment.

Further, the actions taken to redevelop this Site, as part of Chester Pennsylvania's Barry Bridge Park have actually improved the remedy by upgrading the cap and adding a surface drainage system to carry away storm water runoff. Based on current Site ownership and use, and the planned redevelopment activities, the Site is expected to remain protective of human health and the environment.

GPRA Measure Review

As part of this Five Year Review the GPRA Measures have also been reviewed. The GPRA Measures and their status are provided as follows:

Environmental Indicators

Human Health: HEUC - Current Human Exposure Under Control
Groundwater Migration: GMUC - Groundwater Migration Under Control

Sitewide RAU: The Site was determined Site-Wide Ready for Anticipated Use (SWRAU) on June 15, 2006.

Five-Year Review Summary Form

SITE IDENTIFICATION

Site name: Wade (ABM)

EPA ID: PAD980539407

Region: 3	**State:** PA	**City/County:** Chester, Delaware County

SITE STATUS

NPL status: O Final √ Deleted O Other (specify)_____

Remediation Status (choose all that apply): O Under Construction O Operating √Complete

Multiple OUs?* O YES √ NO	**Construction completion date:** June 29, 1988

Has site been put into reuse? √YES O NO O NA

REVIEW STATUS

Lead agency: √ EPA O State O Tribe O Other Federal Agency _____

Author name: ** Jim Feeney

Author title: Remedial Project Manager	**Author Affiliation:** U.S. EPA - Region 3

Review period:*** March 11, 2009 - September 30, 2009

Date(s) of site inspection: 07/22/2004

Type of review: O Post-SARA √ Pre-SARA O NPL-Removal only
O Non-NPL Remedial Action Site O NPL State/Tribe-lead
O Regional Discretion

Review number: O 1 (first) O 2 (second) O 3 (third) √ Other(specify) 4 (fourth)

Triggering action:
O Actual RA Onsite Construction at OU #1 O Actual RA Start at OU# _____
O Construction Completion √ Previous Five-Year Review Report
O Other (specify) _____

Triggering action date: September 30, 2004

Due date (five years after triggering action date): September 2009

* ("OU" refers to operable unit.)
** (If a contractor writes the report, the author name should be written as,"RPM w/ (contractor name) assistance")
*** (Review period should correspond to the actual start and end dates of the Five-Year Review in WasteLAN.)

Five-Year Review Summary Form, continued.

Issues:

- The initial redevelopment activities completed in 2004 improved the original remedy by upgrading the cap with areas of paving and a storm water drainage system. New redevelopment activities associated with the Chester Soccer Stadium include plans to widen an existing paved driveway at the Site and extend and improve areas of paving for a river walk. Detailed plans for this work were submitted to EPA and PADEP in August 2009, showing that the work as planned will not penetrate the existing cap and will ultimately maintain the overall protectiveness of the cap. These plans were approved by EPA contingent on the owner addressing minor comments submitted by PADEP prior to starting construction at the Site.

Recommendations and Follow-up Actions:

- Review any submitted redevelopment plans and conduct Site inspections during redevelopment activities to ensure the remedy remains protective.

Protectiveness Statement:

- The remedial actions implemented at this Site are protective of human health and the environment. Because the remedial actions originally implemented for this Site are protective, and the subsequent activities conducted as part of the Site's redevelopment are improvements to the original remedy, the Site is protective of human health and the environment. There are no human or environmental receptors exposed to unacceptable levels of Site contaminants. Based on current Site ownership and use, the Site is expected to remain protective of human health and the environment.

Other Comments: None

U.S. Environmental Protection Agency Region III
Five -Year Review Report
Wade (ABM) Superfund Site
Chester, Delaware County, Pennsylvania

I. Introduction

The purpose of a Five-Year Review is to determine whether the remedy at a site is protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in Five-Year Review reports. In addition, Five-Year Review reports identify issues found during the review, if any, and recommendations to address them.

The Environmental Protection Agency (EPA) is preparing this Five-Year Review report pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 as amended by the Superfund Amendments and Reauthorization Act of 1986 (CERCLA) §121 and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). CERCLA §121 states:

> *If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.*

The Agency interpreted this requirement further in the NCP; 40 CFR §300.430(f)(4)(ii) states:

> *If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.*

EPA Region III has conducted a Five-Year Review of the remedial actions implemented at the Wade (ABM) Superfund Site, Chester, Delaware County, Pennsylvania. This review was conducted for the entire Site by the Remedial Project Manager (RPM) from March 11, 2009 through September 2009. This report documents the results of the review. This is the fourth Five-Year Review for the Wade (ABM) Site. The triggering action for this review is the signature of the third Five-Year Review, dated September 30, 2004.

The final remedy at this Site was selected in a Record of Decision issued August 30, 1984; therefore it predates the requirement for Five-year Reviews introduced by the Superfund Amendments and Reauthorization Act (SARA) which became effective October 17, 1986. Consequently, though not required by statute, this Five-Year Review was conducted as a matter of EPA policy due to the fact that hazardous substances, pollutants, or contaminants remain at the Site above levels that allow for unlimited use and unrestricted exposure.

II. Site Chronology

Table 1 lists a chronology of events for the Wade (ABM) Superfund Site.

Table 1: Chronology of Site Events

Event	Date
Site began operating as a tire recycling facility	1920's
Site Purchased by Melvin Wade	1971
Site began operating as an illegal chemical dump	1970's
Pennsylvania DER ordered cease operations	1977
Site caught fire. Chemicals burned for days	February 2, 1978
Proposed to NPL List	December 30, 1982
NPL Listing	September 8, 1983
Removal actions to excavate and remove drums and tankers	1981 and 1982
Record Of Decision (ROD) signed State authorized to conduct cleanup	August 30, 1984
Construction Completion	June 29, 1988
Deletion from NPL	March 23, 1989
State takes over Operations and Maintenance Program	May 15, 1989
First Five-Year Review completed	February 3, 1993
Second Five-Year Review completed	April 9, 1999
Potential Purchaser Agreement issued with Chester Parking Authority	March 13, 2003
Third Five-Year Review completed	September, 2004
Fourth Five-Year Review completed	September, 2009

III. Background

Physical Characteristics

The Wade (ABM) Superfund Site is a roughly three-acre parcel located on the bank of the Delaware River in Chester, Pennsylvania, just nine miles south of the City of Philadelphia (see Figure 1, Site Location Map). From 1989 to 2004 the surface of the Site was a vegetated soil cap constructed and maintained as part of the Superfund Remedy. But in 2004 the parcel was converted primarily into a tree-lined asphalt parking facility with about one third of the property remaining grass covered (see Figure 2, Monitoring Well Locations). The Site is bounded by the Commodore Barry Bridge, the Delaware River, a railroad right of way and property owned by the Philadelphia Electric Company. The water table is shallow, from zero to approximately 12 feet in the unconsolidated deposits and soil. The water table is riparian, closely associated with the level of the immediately adjacent Delaware River, and tidal. Hydrogeological studies conducted during the Remedial Investigation showed that contaminated groundwater originating from the Site discharges into the Delaware River. These studies further indicated that, even before the Site was cleaned up, the immense volume of the river water diluted the site contaminants to non-detectable levels.

Land and Resource Use

The Site is located in a formerly industrial portion of Chester, but only two blocks from a residential area. From the 1920's the Site property was used as a rubber recycling facility. In the 1970's, as the recycling business was floundering, the property began operating as a chemical dumping ground. Dumping ended with a catastrophic fire in February1978 (see History of Contamination section below). After the fire, the Site was investigated and cleaned up under EPA's Superfund authority - the property was capped with a soil cover and vegetated, and protected with a gated security fence. The surrounding area has been a mix of residential, public and utility properties including the Commodore Barry Bridge and the Chester waterfront park, which included a public access fishing pier and boat ramp. The Site is also bounded by the Delaware River.

In 2003, EPA signed an Agreement and Covenant Not to Sue Chester Parking Authority (hereafter identified as the "Prospective Purchaser Agreement" or PPA) with the Chester Parking Authority to allow redevelopment of the property while maintaining, and in fact improving, the original remedy selected in the 1984 Record of Decision (ROD). As part of Chester's Barry Bridge Park redevelopment, most of the property was resurfaced with asphalt for parking, with the remaining areas supplemented with clean soil and planted with trees and grassy areas. At the same time the eastern end of the property, at the river, was provided with a new public access fishing pier and paved riverwalk area. The original natural storm drainage was also improved to accommodate the runoff from the impermeable areas; the site was regraded for improved drainage to newly installed storm sewers. The riverfront property immediately south of the Site was also renovated as the main park area with a "Great Lawn", continued riverwalk area and a public access boat ramp. These renovations were completed in the fall of 2004.

Currently, as part of Chester's continuing redevelopment program, the property immediately south of the Site is again being transformed; starting in 2008, most of the Barry Bridge Park area was demolished to prepare for the construction of Chester's new professional soccer stadium on that property. The former Wade Site property is still the paved parking facility and is currently expected to remain so. However, in 2009, there are plans to modify the facility by widening the existing asphalt driveway on the property and extending and improving the paving for the river walk. In accordance with the terms of the 2003 PPA, EPA approval is required before any modifications may proceed on the Site. As noted in Section V below, EPA has reviewed and approved those plans.

History of Contamination

The Wade Site is an old site that was active in the news before Superfund legislation was enacted. It was an illegal waste disposal operation that was discovered by local officials in 1977. An estimated 20,000 barrels and 20 tank trucks full of chemical waste were disposed of or left at the Site.

The Health Director for the City of Chester became aware of the site and had inspected it along with representatives of Pennsylvania's Department of Environmental Resources (PADER) in 1977. Later that year the owner and operators of the site were ordered to clean up the mess. During legal appeals of that order the site was inoperative and virtually abandoned.

In February 1978 the site caught fire. It was a catastrophic fire fueled by volatile mixed wastes made even more hazardous by exploding drums. Firefighters and police attending the fire were mired in the mixed wastes covering the ground and toxic smoke from the fire. The fire was quenched after about twenty hours, but rekindled twice. After the fire was finally extinguished, the property was still covered with oozing chemicals, drums and tank trucks.

Later investigations uncovered that along with waste drum and tank truck storage, on-site operations included dumping of chemical wastes either directly on the ground or into trenches dug into the sandy soil. These actions severely contaminated on-site soil at several locations, as well as the underlying groundwater. The fire added to the hazard with the deposition of mixed and partially burned chemical wastes on the already compromised soils.

Initial Response

As noted above, this Site had been discovered by local officials and ordered shut down. PADER, which had unsuccessfully ordered the site cleaned up in 1977, recommended the Site as a candidate for a Section 7003 cleanup order under the federal Resource Conservation and Recovery Act (RCRA) of 1976. It was then discovered that the owner and operators of the Site were insolvent. In 1980 and 1981 contractors were engaged by PADER and EPA to remove and dispose of the drums and tankers that remained on-site, and to conduct an investigation of soil, groundwater and air quality. This Site was finalized on the list of Superfund Sites (National Priorities List, or NPL) in September 1983. In August 1984, EPA formally selected the remedy presented in the ROD.

Basis for Taking Action

In the summer of 1983, subsequent to the initial response actions described above, a contractor was engaged by PADER to investigate and characterize the remaining hazardous and non-hazardous constituents of the Site, including the debris piles and contaminated soils. Under that contract 750 drums that contained chemicals were removed from the site and 320 soil samples were obtained and analyzed. A focused Feasibility Study (FFS) and Endangerment Assessment were conducted by an EPA contractor in 1984. The soil samples indicated that contamination was widespread; over one hundred different organic and inorganic compounds and elements were identified, including the suspected human carcinogens benzene, chlorinated benzenes, chloroform, tetrachloroethylene, trichloroethylene and bis(ethylhexy phthalate). The Endangerment Assessment concluded that the Site presented elevated lifetime cancer risks to persons with on-site exposures through inhalation / ingestion of contaminated soil.

IV. Remedial Actions

Remedy Selection

The ROD was issued August 30, 1984 and the selected alternative required the following components:

- Remove, decontaminate and dispose off-site the remaining tankers, tires and debris;
- Remove on-site waste piles;
- Demolish and remove the on-site buildings;
- Remove the contaminated soil to a maximum depth of five feet;
- Backfill and regrade the property to a level surface and
- Cover with topsoil and a seeded cap.

The ROD also required installation of a security fence and the implementation of a long term Operation and Maintenance (O&M) program consisting of annual groundwater monitoring and Site inspections along with maintenance to the fence and cap when necessary.

Remedy Implementation

The United States Environmental Protection Agency (EPA) issued a final Record of Decision (ROD) for the Wade ABM Superfund Site in August, 1984. PADER concurred with the ROD and was given the status of lead-agency to remediate the Site.

The ROD described the remedial actions to be implemented at the Site, including the demolition and removal of fire-damaged buildings, excavation of contaminated soil to a maximum depth of five feet, removal and disposal of that soil, backfilling, regrading and contouring the Site with imported fill and covering the entire Site with a vegetated topsoil cap. The selected remedial action also

required the installation of a security fence and the implementation of a long term Operation and Maintenance (O&M) program consisting of annual groundwater monitoring and Site inspections along with maintenance to the fence and cap when necessary. As the lead agency, PADER implemented the remedial actions, as described in the ROD, which were completed December 20, 1987, and also agreed to conduct the O&M on a yearly basis beginning in May, 1989.

Operation and Maintenance

Operation and maintenance of this Site is conducted or overseen by the Pennsylvania Department of Environmental Protection (PADEP, formerly PADER) under the requirements of the1984 ROD and the Operation and Maintenance Plan (O&M Plan). The O&M Plan included the following activities:

1. Site Inspection: Visual inspection of surface conditions and monitoring wells.

2. Installation of Upgradient Monitoring Wells: The ROD required additional upgradient monitoring well clusters in off-site locations for monitoring groundwater quality before it flows under the Site. (However, the O&M Plan concluded that two of the existing wells would adequately provide this information.)

3. Water Sampling: Annually to monitor groundwater quality.

4. Laboratory Analysis: Groundwater samples will be analyzed for contaminants, with a reevaluation of sampling protocol after five years.

5. Replacement of Monitoring Wells: As necessary. (New wells are incorporated into O&M Plan activities. In 1994, eight monitoring wells were replaced, and in 2003 another five monitoring wells were replaced. Some of the older wells were abandoned.)

6. Well Maintenance and Rehabilitation: Every five years.

7. Topsoil Maintenance: Every two years.

8. Mowing of Grass: Yearly, during the growing season, as needed.

The results of the groundwater monitoring are sent to EPA in annual reports for evaluation. Additionally, the annual reports describe the physical condition of the Site. The O&M tasks have proceeded without significant issues. Since 2004, the grassy areas, and paved areas of the parking facility have been maintained by the City of Chester.

V. Progress Since Last Five-Year Review

Scheduled annual inspections and annual sampling of groundwater monitoring wells have been conducted successfully. Inspections of the Site and regular mowing of the grass have been conducted as necessary to keep the now renovated Site remedy intact and secure.

In 2009, as this report is being compiled, the City of Chester is again redeveloping the property immediately to the south of the former Wade Site. Most of the property that was the location of the Barry Bridge Park is being redeveloped into the new Chester professional soccer stadium. The stadium project will also utilize the previously vacant, adjacent property southwest of the park area. Additionally, to provide improved access to the stadium area, the stadium project also includes plans to widen an existing paved driveway at the Site and extend and improve areas of paving for a river walk. Detailed plans for this work were submitted to EPA and PADEP in August 2009, showing that the work as planned will not penetrate the existing cap and will ultimately maintain the overall protectiveness of the cap. These plans were approved by EPA contingent on the owner addressing minor comments submitted by PADEP prior to starting construction at the Site.

VI. Five-Year Review Process

Administrative Components

The Wade (ABM) Five-Year Review was conducted by James Feeney, EPA's Remedial Project Manager for the Site. Mr. Feeney conducted the Site inspection on March 11, 2009. A follow-up inspection was conducted jointly with Dustin Armstrong, representing PADEP on April 22, 2009 to coincide with the annual sampling event.

Community Involvement

Although quiet and out of the public eye for many years, the advent of the soccer stadium construction has again raised the Site to be an issue of concern to the community.

As part of their planning for the new stadium, the City of Chester has been conducting community outreach concerning the stadium and associated construction activities. A local community group, the Chester Environmental Partnership (CEP), in particular, has been following the developments of the construction. A presentation prepared for a July 8, 2009 joint meeting of the CEP, Chester, EPA and PADEP indicated that a portion of the Wade Site would be involved in the redevelopment activities. Specifically, the main driveway (Flower Street extension) that was constructed to provide access into the Barry Bridge Park and the parking facility on the former Wade Site is now planned to be widened for improved access to the stadium area. The presentation also stated that the notice to EPA (as required by the 2003 Potential Purchaser Agreement) had been prepared and was being reviewed by Chester prior to being submitted. In continuing dialogue with the CEP, EPA supplied additional information concerning the history and status of the Site and requirements of the PPA.

Overall there is a renewed interest in the conditions and recent developments at the Wade Site. As discussed above, the local community, as represented by the CEP, has shown strong interest in the Wade Site and has been involved in outreach events concerning the new construction for the soccer stadium. Pennsylvania and the City of Chester have intense interest in the area including the Site, due to the adjacent soccer stadium development which has received redevelopment and grant monies. There has already been significant outreach for the Wade Site as it is associated with and affected by the soccer stadium development. Additionally, an EPA fact sheet was drafted and distributed to the public to provide additional information and background on the Site and the Five-Year Review process as well as notification that this Five-Year Review was being conducted with an expected completion date in September 2009. This fact sheet is attached as Attachment 1.

Document Review

The Five-Year Review included a review of relevant documents including the 1984 ROD, the 2003 Potential Purchaser Agreement, the 2004 Five-Year Review Report, the Operation and Maintenance reports from the last five years, and the plans for the upgrades to the existing driveway and paving for the river walk that were submitted as part of the soccer stadium development.

Data Review

The annual sampling of the monitoring wells and the continued operation and maintenance have been conducted as required by the ROD. As the operation and maintenance phase of the Wade Site continues to be conducted by the state of Pennsylvania, EPA reviewed the collective progress reports, submitted by PADEP, describing the sampling and maintenance activities performed since the last Five-Year Review conducted in 2004. The results of the on-site monitoring well sampling continue to show that the contaminants in the groundwater are at low concentrations and relatively stable or are displaying a generally declining trend over time. The 2009 Sampling Report, including a five year history of results, is included as Attachment 2.

As noted in the prior Five-Year Review Reports, the greatest decrease in the underlying groundwater contamination occurred soon after the removal of the contaminated soils. Data taken from sampling conducted under the operation and maintenance program in 1991, showed the levels of contamination dropping several orders of magnitude from levels presented in the 1984 ROD.

In February 2003, PADEP arranged for the monitoring well network to be upgraded. Five new wells were installed at the site to replace six old wells. Then the old wells were abandoned and grouted, so that they could not serve as a potential entry point for contamination. A copy of the 2003 installation report is on file at the EPA Region III office. A characteristic of the Site originally identified with the earlier replacement of wells in 1994 was again seen with the 2003 well replacements, but to a lesser extent; as older wells are replaced with newly installed wells, there can be an increase in concentration in some of the newly installed wells, apparently due to the disturbance of the soil caused by the well installation. The somewhat higher concentrations in these

new wells again demonstrate a declining trend with time. Overall, for the last five years, with no new wells installed, only stable or generally declining trends have been observed.

Site Inspection

The initial Site inspection for this Five-Year Review was conducted on March 11, 2009 by James Feeney, EPA's Remedial Project Manager for the Site. A follow-up inspection was conducted jointly with Mr. Feeney and Dustin Armstrong, representing PADEP, on April 22, 2009 to coincide with the annual groundwater sampling event. The inspections focused on the improvements made to the remedy as part of the Barry Bridge redevelopment activities in 2004. On both visits the site was found to be in excellent condition. The paved areas that comprise the parking lot and entrance driveway were intact and even; the grassy areas were well vegetated and showed no signs of wear or erosion. The inlets and outfall of the stormwater drainage system were also in excellent condition with no signs of stoppages or backups.

Interviews

As noted above, the construction of the new soccer stadium on the adjacent property has revived the long dormant public interest in the Wade Site. In response to this new interest, on July 8, 2009 in a joint meeting with PADEP, Charles Lee, Director of EPA's Office of Environmental Justice and Reggie Harris, EPA's Regional Environmental Justice Coordinator met with the Chester Environmental Partnership at Faith Temple Church in Chester. The meeting included a presentation and open discussion on the soccer stadium, the Wade Site and other environmental topics affecting Chester. Questions posed by the CEP were discussed at the meeting and further addressed in the fact sheet (Attachment 1) that was developed and circulated in the following weeks.

On July 23, 2009 the Wade Site was discussed in a telephone interview with David N. Sciocchetti, Executive Director of the Chester Economic Development Authority. Mr. Sciocchetti described the widening of Flower Street that was being planned for the Wade Site and indicated that the plans and EPA notification were currently under review. Mr. Sciocchetti also reaffirmed that the City of Chester is committed to involving the community on all aspects of the new soccer stadium construction including the limited involvement of the Wade Site. He also indicated that prior to the planning and construction involved with the stadium, there had been no specific interest, comments, or concern from the public concerning the Wade Site.

VII. Technical Assessment

Question A: Is the remedy functioning as intended by the decision documents?

Yes. The observations of the Site inspections, along with the review of the 1984 ROD, Operation and Maintenance documents and the original (2004) redevelopment plans, indicate that the remedy is operating as intended by the ROD, and functioning at, or better than, the performance standards anticipated by the ROD.

The original soil cap had remained intact until the 2004 redevelopment work when the cap was upgraded with supplemental soils, paved parking surfaces, and improved stormwater drainage. Because of the redevelopment activities, there is now even less potential for exposure to subsurface residual soil contamination and less potential for erosion of the cap. Additionally, the new redevelopment plans for upgrading the existing paved driveway and extending the paved river walk areas indicate that the finished construction will also function at or better than the intent of the original remedy.

The annual sampling of the monitoring wells and the continued operation and maintenance have been conducted as required by the ROD. The results of the on-site monitoring well sampling show that the contaminant levels detected in the groundwater have remained stable at low levels and, in some wells, continued to decline over the years.

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and Remedial Action Objectives (RAOs) used at the time of the remedy still valid?

Yes. The remedy as selected in the 1984 ROD for this Site was determined to be protective of human health and the environment due to the clean soil cap minimizing the potential for direct contact with residually contaminated soils, and the negligible impact of the contaminants on water quality of the Delaware River. The cover system originally envisioned by the ROD as a soil cap was upgraded with the supplemental soils and paved parking surfaces of the 2004 redevelopment activities, such that there is even less potential for exposure to subsurface residual soil contamination. The long-term sampling of the monitoring wells has shown a declining trend in the groundwater contaminant levels and current contaminant levels that are several orders of magnitude lower than those identified in the 1984 ROD.

Today, ecological risk assessment is an integral part of the investigations leading to the selection of a Superfund remedy, however, in 1984, remedy selection was typically driven by the identified risk to human health. Consequently, at the Wade Site, the remedy to address the site contamination was selected primarily to prevent direct human contact; ecological risk was not considered. The contaminated containers, buildings and soils were removed, the clean soil cap was installed (and upgraded by the 2004 redevelopment) providing a protective barrier, and the residual contamination levels in the groundwater have declined to minimal levels. Given these conditions, the current ecological risk from the site is expected to be negligible, and no further investigation is necessary.

Changes in Standards and To Be Considered (TBCs)

There have been no changes in Applicable or Relevant and Appropriate Regulations (ARARs) or TBCs that affect the protectiveness of the implemented remedy.

Changes in Exposure Pathways, Toxicity, and Other Contaminant Characteristics

The exposure pathways identified in the1984 ROD were the potential direct contact exposures to wastes, contaminated soils and debris. Following the removal of the on-site buildings and debris, and the excavation and removal of surface soil, only the potential for exposure to subsurface soil remained. Backfilling, grading and capping the site minimized the potential for this exposure pathway. The cover system originally envisioned by the ROD has now been upgraded with the supplemental soils and paved parking surfaces of the 2004 redevelopment activities, such that there is even less potential for exposure to subsurface residual soil contamination.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

The fence called for in the 1984 ROD and constructed and maintained by PADEP was removed in 2004, as part of the redevelopment activities. The original purpose of the fence was to protect the integrity of the soil cap, which minimized the potential for exposure to subsurface residual contamination. However, the goal of minimizing the potential exposure to subsurface residual contamination will continue to be met, because the supplemental materials and the paved surfaces improved the protectiveness of the cap, and the continued maintenance that is being implemented by the City of Chester as part of the standard facility upkeep will ensure the continued integrity of the upgraded cap.

Technical Assessment Summary

As evidenced by the review of the data, the observations of the Site inspection and the details of the 2004 redevelopment activities, the remedy is functioning as intended by the 1984 ROD. The goal of minimizing potential exposure to subsurface residual contamination will continue to be met by the original remedy as improved by the 2004 Site redevelopment activities and the planned 2009 redevelopment activities. There is no other information that calls into question the protectiveness of the remedy.

VIII. Issues

Issue	Currently Affects Protectiveness (Y/N)	Affects Future Protectiveness (Y/N)
The initial redevelopment activities completed in 2004 improved the original remedy by upgrading the cap with areas of paving and a storm water drainage system. New redevelopment activities associated with the Chester Soccer Stadium include plans to widen an existing paved driveway at the Site and extend and improve areas of paving for a river	N	N

walk. Detailed plans for this work were submitted to EPA and PADEP in August 2009, showing that the work as planned will not penetrate the existing cap and will ultimately maintain the overall protectiveness of the cap. These plans were approved by EPA contingent on the owner addressing minor comments submitted by PADEP prior to starting construction at the Site.		

IX. Recommendations and Follow-Up Actions

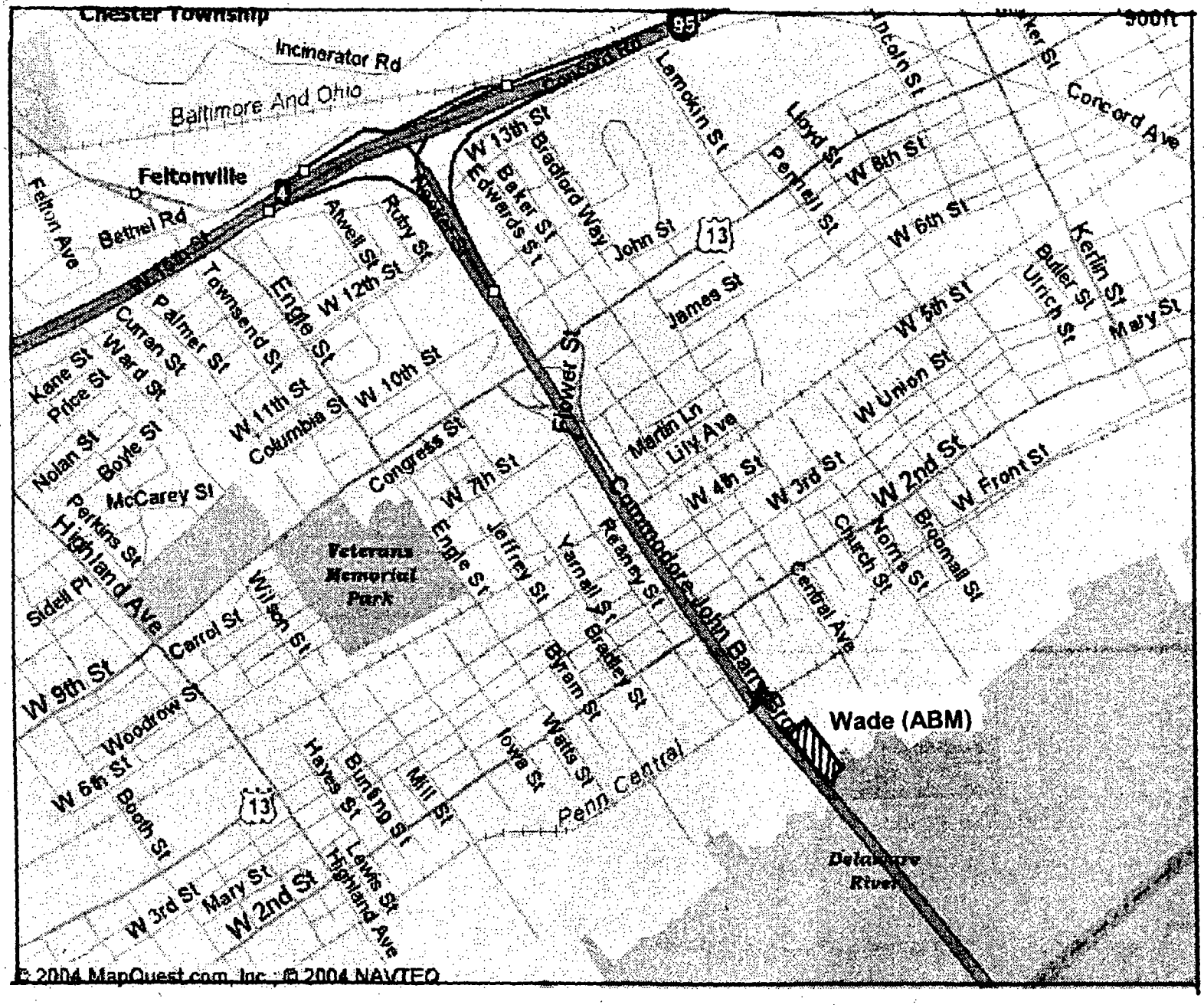
Issue	Recommendations, Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness? (Y/N)	
					Current	Future
Potential Redevelopment Activities	Review any submitted redevelopment plans and conduct Site inspections during development activities	EPA	EPA	Annually or as plans are submitted	N	N

X. Protectiveness Statement

The remedial actions implemented at this Site are protective of human health and the environment. Because the remedial actions originally implemented for this Site are protective, and the subsequent activities conducted as part of the Site's redevelopment are improvements to the original remedy, the Site is protective of human health and the environment. There are no human or environmental receptors exposed to unacceptable levels of Site contaminants. Based on current Site ownership and use, the Site is expected to remain protective of human health and the environment.

XI. Next Review

The next Five-Year Review for the Wade (ABM) Superfund Site is required by September 2014, five years from the signature date of this review.



Wade (ABM) Superfund Site

Figure 1. Location Map

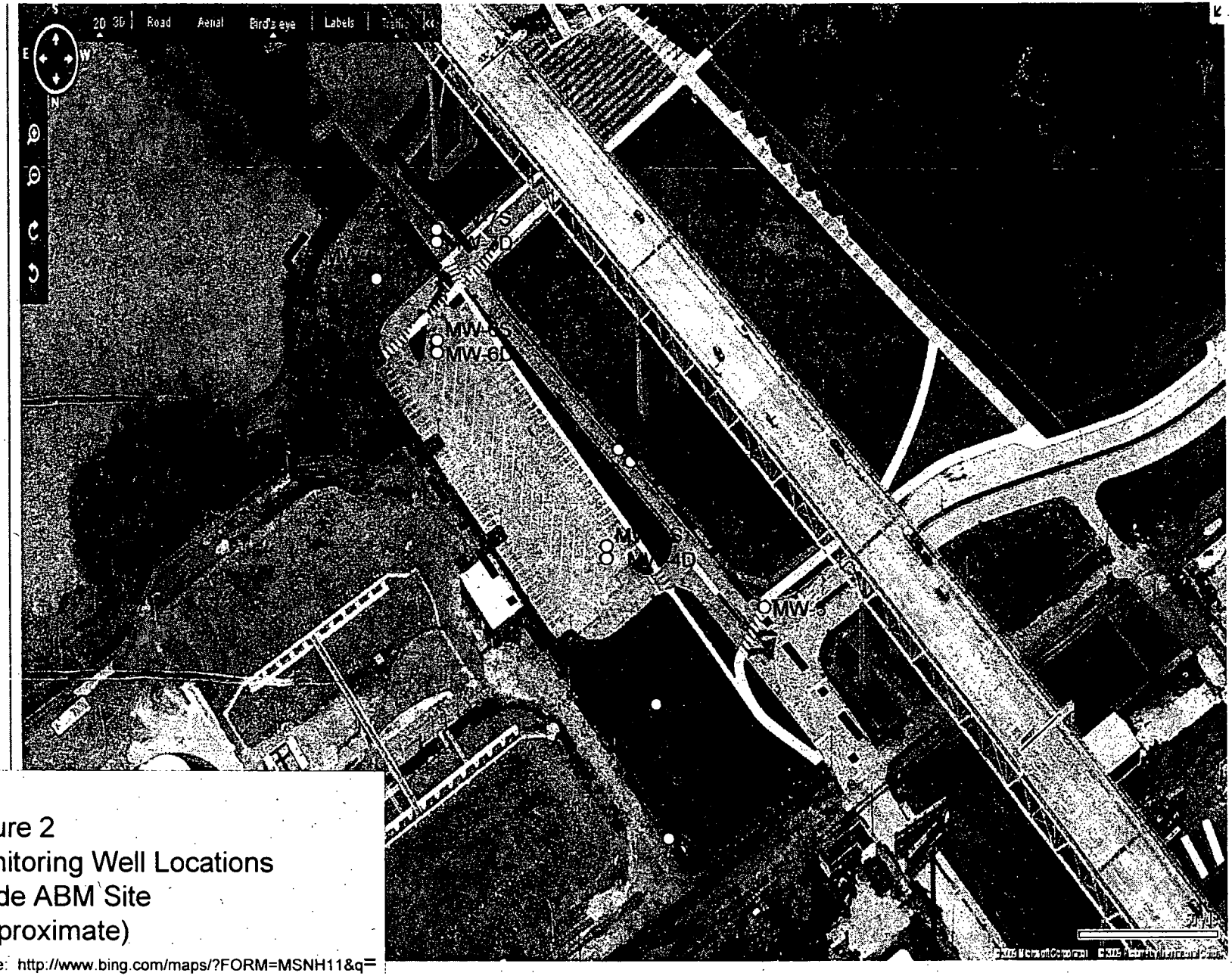


Figure 2
Monitoring Well Locations
Wade ABM Site
(Approximate)

Source: http://www.bing.com/maps/?FORM=MSNH11&q=

Attachment 1

July 2009 Fact Sheet
Site History and Summary

Wade (ABM) Superfund Site
City of Chester
Delaware County, Pennsylvania

History and Site Summary (as of July 2009)

History

The Wade Site was an illegal chemical dumpsite, almost directly beneath the Commodore Barry Bridge, discovered by local officials in 1977. It is a three acre property in a formerly industrial portion of Chester, but only two blocks from a residential area. An estimated 20,000 barrels and 20 tank trucks full of chemical waste had been dumped or left at the Site. In February 1978 the site caught fire. It was a catastrophic fire fueled by the chemicals and exploding drums. Firefighters fought the flames for over twenty hours to put it out, but it started burning two more times. After the fire was finally extinguished, the property was still covered with burned buildings, oozing chemicals, drums and abandoned tank trucks.

Wade was named a Superfund Site in September 1983, allowing EPA to study it and decide on the way to clean up the mess. EPA decided that the best way to cleanup the Wade site was to do the following:

- Remove all of the remaining tank trucks, drums, tires, waste piles and debris;
- Demolish and remove the on-site burned out buildings;
- Remove the chemical-soaked soil to a maximum depth of five feet;
- Fill in the holes with clean soil to level the site; and
- Cover with topsoil and a seed with grass to complete the "cap" on the site.
- Provide long-term maintenance for the cap, and monitoring for groundwater beneath the site.

These tasks were completed in 1984, and then the site was surrounded with a locking fence.

The groundwater monitoring wells at the site are now sampled yearly to monitor water quality below the site. Now that the surface of the site has been cleaned up and all of the surface contaminants removed, sampling has shown that even the low levels of chemicals that remained in the water, inaccessible beneath the site, were also disappearing. The Pennsylvania Department of Environmental Resources agreed to look after the site and continue to sample the water every year.

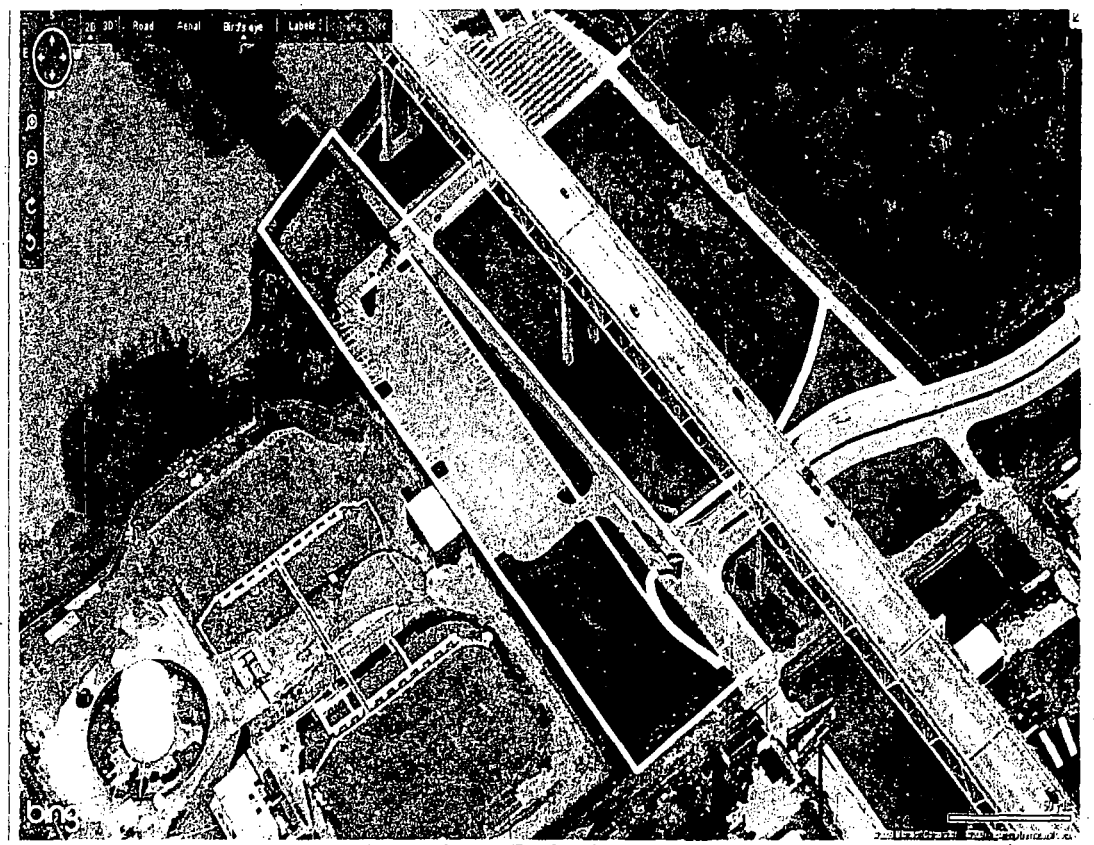
In 2003, after reaching an agreement with EPA, the Chester Parking Authority purchased the Wade property with plans to renovate and use it as the parking lot for the Barry Bridge Park. With Pennsylvania overseeing it, the Chester Parking Authority's construction actually improved the site significantly, with an additional two feet of clean soil, improved surface drainage (including the addition of storm sewers) and asphalt areas providing an even better cover than the original remedy to the point that the security fence was no longer needed and was removed.

The Site Today and into the Future

As part of the 2003 agreement, the Chester Parking Authority may not make any changes to the former Wade property without EPA's prior approval. Fully detailed plans to expand the existing road on the Wade site as part of the new soccer stadium construction on the adjacent property (former Barry Bridge Park) are not yet ready, and therefore have not been submitted to EPA, but the conceptual design and notes from the presentation appear to be acceptable and appropriate for preserving the protective remedy at the Wade site.

After a Superfund Site is cleaned up, EPA has a continuing requirement, and commitment, to conduct a site review at least every five years - and more often if site conditions demand it. In the "five-year reviews" at Wade, EPA inspects the property to make sure the cap is intact, with the paved surfaces and grass areas in good condition, and reviews the groundwater sampling to check that the contamination continues to decline. In the most recent "five-year review" conducted for Wade in 2004, EPA recognized the improvements made by the Chester Parking Authority, and again certified that the remedy continues to operate as required to protect Human health and the environment. Five-year reviews and the groundwater sampling will continue at Wade until even the miniscule levels of contaminants disappear from the groundwater.

EPA is currently reviewing the most recent groundwater sampling and conducting the five-year review for 2009. The 2009 five-year review report is expected to be issued by September.



Approximate Wade Site Boundary

Attachment 2

June 30, 2009
Wade Site O&M Report

Pennsylvania Department of Environmental Protection

2 East Main Street
Norristown, PA 19401
June 30, 2009

Southeast Regional Office

Phone: 484-250-5960
Fax: 484-250-5961

Mr. James Feeney
Remedial Project Manager
U.S. EPA, Region III (3HS21)
1650 Arch Street
Philadelphia, PA 19103-2029

Re: Wade Site O&M

Dear Mr. Feeney:

The Department of Environmental Protection (Department) performed groundwater sampling at the Wade ABM Site (Site) on April 22 and 23, 2009. Our annual sampling for 2008 was delayed due to laboratory and field staff scheduling conflicts. Department staff collected samples from 12 of 13 monitoring wells at the site. No sample was collected from MW-3, which is located in the roadway near the Site entrance, because we were not able to remove the bolts securing the protective lid. All wells were either purged of three standing well volumes or purged dry then sampled. Shallow wells were purged and sampled using precleaned Teflon® bailers. Decontamination using an Alconox® solution followed by a tap water rinse was completed between sampling locations. Deep wells (wells requiring more than 25 gallons of purging) were purged and sampled using a Grundfos® Redi-Flo 2 submersible pump equipped with combined discharge tubing and wire lead. To prevent cross contamination, wells were sampled from least to most contaminated based on 2007 sampling results. Based on these results purge water from MW-2 and MW-7D was treated using granular-activated carbon prior to discharge to the ground. Purge water from other wells was discharged directly to the ground near the sampled well without treatment.

Samples were collected and analyzed for volatile and semivolatile organic compounds. All samples were shipped to the Department's laboratory in Harrisburg, PA, for analysis. Sample bottle selection, preservation, recordkeeping, and shipping were performed in accordance with our laboratory's guidelines. Blind duplicate and trip blank (VOCs only) samples were also collected. Additionally, a post-filter sample was collected from the discharge of our granular activated carbon treatment canister in the course of purging MW-7D.

I have enclosed the annual operations and maintenance sampling data for the Site. I have included my "hits table," my data summary table (showing "hits" data collected since 2004), and an updated figure showing the monitoring well locations. I have also enclosed a full listing of the compounds on the lab's VOA1 and SVOA1 analyte lists. Individual sample reports, chain-of-custody documents, quality control data, and internal correspondence associated with this sampling event are available for review in the Department's regional records.

If you have any questions or comments regarding the enclosed information, please feel free to contact me at 484-250-5723.

Sincerely,

Dustin A. Armstrong
Project Officer
Environmental Cleanup

Enclosures

cc: Mr. Sheehan (w/o enclosures)
Mr. R. Patel (w/o enclosures)
Re 30 (joh09ecp)181

HITS

WADE ABM SITE ANNUAL GROUNDWATER MONITORING 2008*

Results are expressed in ug/L.

Sampling date: April 22 & 23, 2009

Compound detected	MW-1 D	MW-1 S	MW-2	MW-4D	MW-4S	MW-5D	MW-5S		MW-6D	MW-6S		MW-7D	MW-7S	MW-8	
VOC's															
Chloroethane							3						2.2	4.5	
1,1 Dichlorothene			2												
1,1-Dichloroethane	0.93	0.57	9.4				3			0.5		1.8			
Benzene	0.63		29.3				5.7						0.51	14.1	
Trichlorethene												1.7			
Chlorobenzene				1			146	E				1.4			
1,2-Dichloropropane	10.2						1.1					4.1			
1,2-Dichlorethene (total)							0.67					2.5			
Toluene							1.6								
Ethylbenzene							67	E							
Xylene (total)							8.61								
1,2-Dichloroethane	7.6			0.57		0.42	J		1.8			34.1			
Acetone							2.7	B		3.9	B			4.8	B
1,2-Dichlorobenzene				0.53			11.7								
1,4-Dichlorobenzene				0.57			21.5								
1,3-Dichlorobenzene							0.96								
Isopropylbenzene							8.5								
t-Butyl alcohol										6.1					
Tetrahydrofuran							4.2	B						2.7	B
Naphthalene			0.52				3.5							0.67	
MTBE				3.1											
n-Propylbenzene							9								
n-Butylbenzne							0.88								
1,2,4Trimethylbenzene							2.6								
sec-Butylbenzne							1.2								
Total Volatiles	19.36	0.57	41.32	5.77	0	0.42	303.4		1.8	10.5		45.6	2.71	26.77	
SVOC's															
Compound detected															
Acenaphthene										10.8			5.14	4.63	
2-Methylnaphthalene										7.41					
Fluoranthene										37.8			3.1	3.61	
Pyrene													5.54	6.44	
bis(2-Ethylhexyl)Phthalate		91.1			39.6								77.6		
Naphthalene										12.8					
1,4-Dichlorobenzene							8.32								
Phenanthrene										17.7			4.1	3.01	
Anthracene										6.28					
Chrysene										21.6					
Benzo(a)anthracene										21.9					
Benzo(b)fluoranthene										40					
Benzo(a)pyrene										19.8					
Indeno(1,2,3-cd)pyrene										8.64					
Benzo(g,h,i)perylene										15.7					
Acenaphthylene										4.83					
Aniline							6.31			11.1				11	
2-Picoline							8.38			11.2				11.2	
Total SVOC's	0	91.1	0	0	39.6	0	21.01		0	247.56		0	95.48	39.89	

* 2008 samples collected spring '09

Wade Operations and Maintenance Sampling
Volatile Organic Compounds

Compound detected	MW-1S					MW-1D					MW-2					MW-3D				
LEVEL (ug/L)	2004	2005	2006	2007	2008*	2004	2005	2006	2007	2008*	2004	2005	2006	2007	2008*	2004	2005	2006	2007	2008*
VOC's																				
Chloroethane																				NS
1,1 Dichloroethene														2.4	2					NS
1,1-Dichloroethane	1				0.57	3	1.5	1	1.4	0.93	3	6.9	8	12.2	9.4					NS
Benzene						4	1.5	1	1.4	0.63	150	130	120	56.4	29.3	15	12	9	7.4	NS
Trichlorethene																				NS
Chlorobenzene																59	23	37	20	NS
1,2-Dichloropropane						64	27	28	21.6	10.2				7.3		5	2.9	3	3.1	NS
1,2-Dichlorethene (total)																				NS
Toluene																				NS
Ethylbenzene						1														NS
Xylene (total)																				NS
Vinyl Chloride																				NS
Chloroform																				NS
1,2-Dichloroethane	2					19	12	11	8.7	7.6				3.1		1	1.3			NS
1,1,1-Trichloroethane																				NS
4-Methyl-2-pentanone																				NS
Methylene Chloride	3		1			4		2			4		1			3		1		NS
Acetone	6		2	3.2		3			2.5					7.3					2.7	NS
Carbon Disulfide						1														NS
Chloromethane																				NS
2-Butanone	800		2			110		2					2					2		NS
2-Hexanone																				NS
Trichlorofluoromethane																				NS
1,2-Dichlorobenzene																8	1.9		1.7	NS
1,4-Dichlorobenzene																5	1.2		1.7	NS
Methyl Acetate																				NS
1,3-Dichlorobenzene																			1.8	NS
Isopropylbenzene						1								0.51						NS
1,2,4-Trichlorobenzene																				NS
Tetrachloroethene																				NS
1,4-Dioxane				8.8																NS
t-Butyl alcohol																				NS
Tetrahydrofuran																				NS
Naphthalene															0.62					NS
MTBE																				NS
n-Propylbenzene																				NS
n-Butylbenzne																				NS
1,2,4Trimethylbenzene																				NS
sec-Butylbenzne																				NS
Total Volatiles	812	0	5	12	0.57	210	42	45	35.6	19.36	157	136.9	131	89.21	41.32	96	42.3	52	38.4	NS

Wade Operations and Maintenance Sampling
Volatile Organic Compounds

Compound detected	MW-4S					MW-4D					MW-5S					MW-5D				
LEVEL (ug/L)	2004	2005	2006	2007	2008*	2004	2005	2006	2006	2008*	2004	2005	2006	2007	2008*	2004	2005	2006	2007	2008*
VOC's																				
Chloroethane															3					
1,1 Dichloroethene																				
1,1-Dichloroethane				0.84										1.2	3					
Benzene				1.9							7	5.5	5	3.8	5.7					
Trichlorethene																				
Chlorobenzene				7.1			3.9		3.9	1		79	98	79.6	146					
1,2-Dichloropropane				0.94											1.1					
1,2-Dichlorethene (total)											3				0.67					
Toluene															1.6					
Ethylbenzene															67					
Xylene (total)															8.61					
Vinyl Chloride																				
Chloroform																				
1,2-Dichloroethane							1.8		1.6	0.57	7									0.42
1,1,1-Trichloroethane											5									
4-Methyl-2-pentanone																				
Methylene Chloride	6		1			6		1			3		2			6		2		
Acetone			2	2.7							5	1.5	3	6.6	2.7	1				
Carbon Disulfide																				
Chloromethane											94									
2-Butanone			2										2							
2-Hexanone																				
Trichlorofluoromethane																				
1,2-Dichlorobenzene						1	1.1		1.7	0.53	20	8.1	8	8.4	11.7					
1,4-Dichlorobenzene				0.5					2.2	0.57	25	10	11	15.1	21.5					
Methyl Acetate																				
1,3-Dichlorobenzene											2				0.96					
Isopropylbenzene															8.5					
1,2,4-Trichlorobenzene																				
Tetrachloroethene																				
1,4-Dioxane														22.4						
t-Butyl alcohol																				
Tetrahydrofuran															4.2					
Naphthalene															3.5					
MTBE										3.1										
n-Propylbenzene															9					
n-Butylbenzene															0.66					
1,2,4Trimethylbenzene															2.8					
sec-Butylbenzene															1.2					
Total Volatiles	6	0	5	13.98	0	7	6.8	1	9.4	5.77	171	104.1	129	137.1	303.4	7	0	2	0	0.42

Wade Operations and Maintenance Sampling
Volatile Organic Compounds

Compound detected	MW-6S					MW-6D					MW-7S					MW-7D				
LEVEL (ug/L)	2004	2005	2006	2007	2008*	2004	2005	2006	2007	2008*	2004	2005	2006	2007	2008*	2004	2005	2006	2007	2008*
VOC's																				
Chloroethane			1								5	7.9	3	3.2	2.2					
1,1 Dichloroethene																				
1,1-Dichloroethane	1		3		0.5			3	0.55							3	2.1	2	2	1.8
Benzene														0.77	0.51					
Trichlorethene																1	1.2	1	1.5	1.7
Chlorobenzene			1													2	2	2	2.3	1.4
1,2-Dichloropropane																6	4.7	5	5.4	4.1
1,2-Dichlorethene (total)			1													3	2	2	2.5	2.5
Toluene	3																			
Ethylbenzene																				
Xylene (total)	4																			
Vinyl Chloride			2																	
Chloroform																				
1,2-Dichloroethane						5	3.7		3.1	1.8						34	33	35	36.9	34.1
1,1,1-Trichloroethane																				
4-Methyl-2-pentanone																				
Methylene Chloride	2		4			2		4			4		2			2		1		
Acetone	9		4	4.8	3.9						2	1.5	5	5.7						
Carbon Disulfide																				
Chloromethane																				
2-Butanone			2															2		
2-Hexanone																				
Trichlorofluoromethane																				
1,2-Dichlorobenzene			1																	
1,4-Dichlorobenzene			1																	
Methyl Acetate																				
1,3-Dichlorobenzene			1																	
Isopropylbenzene																				
1,2,4-Trichlorobenzene			1																	
Tetrachloroethene			2																	
1,4-Dioxane				30.6					17.5					14.9					77.6	
t-Butyl alcohol				3.9	6.1															
Tetrahydrofuran				1.3																
Naphthalene																				
MTBE																				
n-Propylbenzene																				
n-Butylbenzne																				
1,2,4-Trimethylbenzene																				
sec-Butylbenzne																				
Total Volatiles	19	0	24	40.8	10.5	7	3.7	7	21.15	1.8	11	9.4	10	24.57	2.71	51	45	50	128.2	45.6

Wade Operations and Maintenance Sampling
Volatile Organic Compounds

Compound detected	MW-8				
LEVEL (ug/L)	2004	2005	2006	2007	2008*
VOC's					
Chloroethane	17			4.5	4.5
1,1 Dichloroethene					
1,1-Dichloroethane					
Benzene	26		34	18.3	14.1
Trichlorethene					
Chlorobenzene					
1,2-Dichloropropane					
1,2-Dichlorethene (total)					
Toluene	1				
Ethylbenzene					
Xylene (total)					
Vinyl Chloride					
Chloroform					
1,2-Dichloroethane					
1,1,1-Trichloroethane					
4-Methyl-2-pentanone					
Methylene Chloride	2		2		
Acetone	4		6		4.8
Carbon Disulfide					
Chloromethane					
2-Butanone					
2-Hexanone					
Trichlorofluoromethane					
1,2-Dichlorobenzene					
1,4-Dichlorobenzene					
Methyl Acetate					
1,3-Dichlorobenzene					
Isopropylbenzene					
1,2,4-Trichlorobenzene					
Tetrachloroethene					
1,4-Dioxane				76.2	
t-Butyl alcohol				17.2	
Tetrahydrofuran				3.7	2.7
Naphthalene					0.67
MTBE					
n-Propylbenzene					
n-Butylbenzne					
1,2,4Trimethylbenzene					
sec-Butylbenzne					
Total Volatiles	50	0	42	122	26.77

Wade ABM
O and M Sampling Results
Semi-Volatiles

Compound detected	MW-1S					MW-1D					MW-2					MW-3D					MW-4S				
LEVEL (ug/L)	2004	2005	2006	2007	2008*	2004	2005	2006	2007	2008*	2004	2005	2006	2007	2008*	2004	2005	2006	2007	2008*	2004	2005	2006	2007	2008*
SVOC's																									
Fluorene																				NS					
Acenaphthene																				NS					
2-Methylnaphthalene																				NS					
Di-n-Butylphthalate			1			0.8		0.8					1					1		NS			1		
Fluoranthene																				NS					
Pyrene																				NS					
bis(2-Ethylhexyl)Phthalate	30		30		91.1	31		0.9			14		1					2		NS	3		5		39.6
Phenol	0.8																			NS					
Naphthalene											0.7		0.6			0.6				NS					
1,3-Dichlorobenzene																				NS					
1,4-Dichlorobenzene																4				NS					
1,2-Dichlorobenzene																5				NS					
Isophorone																				NS					
Diethylphthalate																				NS					
Phenanthrene																				NS					
Anthracene																				NS					
Chrysene																				NS					
Benzo(a)anthracene																				NS					
Benzo(b)fluoranthene																				NS					
Benzo(a)pyrene																				NS					
Indeno(1,2,3-cd)pyrene																				NS					
Benzo(g,h,i)perylene																				NS					
4-Chloraniline																				NS					
Pentachlorophenol																				NS					
Benzo(k)fluoranthene																				NS					
Dibenzo(a,h)anthrcene																				NS					
Dimethylphtalate																				NS					
Carbazole																				NS					
4- Methylphenol																				NS					
Atrazine																				NS			1		
Acenaphthylene																				NS					
N-Nitrosodiphenylamine (1)																				NS					
Caprolactam																				NS		110	6		
Benzaldehyde																				NS					
Aniline																				NS					
2-Picoline																				NS					
Total SVOC's	30.8	0	31	0	91.1	31.8	0	1.7	0	0	14.7	0	2.6	0	0	9.6	0	3	0	NS	3	110	13	0	39.6

Wade ABM
O and M Sampling Results
Semi-Volatiles

Compound detected	MW-4D					MW-5S					MW-5D					MW-6S					MW-6D				
LEVEL (ug/L)	2004	2005	2006	2007	2008*	2004	2005	2006	2007	2008*	2004	2005	2006	2007	2008*	2004	2005	2006	2007	2008*	2004	2005	2006	2007	2008*
SVOC's																									
Fluorene																				3.59					
Acenaphthene																2	1.3			10.8			1		
2-Methylnaphthalene																				7.41					
Di-n-Butylphthalate			2					1			0.8		2			0.5							0.8		
Fluoranthene																1			4.22	37.8			1		
Pyrene																3	1.9		12.8				2		
bis(2-Ethylhexyl)Phthalate	39	1.1	2			40		1			7		2			2			20.7		75	9.5	2		
Phenol		3														2						2.6			
Naphthalene																				12.8					
1,3-Dichlorobenzene																									
1,4-Dichlorobenzene									13	8.32															
1,2-Dichlorobenzene	0.6								8.57																
Isophorone																									
Diethylphthalate																									
Phenanthrene																			1.32	17.7					
Anthracene																				6.28					
Chrysene																0.7				21.6			0.6		
Benzo(a)anthracene																0.6				21.9			0.6		
Benzo(b)fluoranthene																			2.5	40					
Benzo(a)pyrene																0.6			2.74	19.8			0.6		
Indeno(1,2,3-cd)pyrene																				8.64					
Benzo(g,h,i)perylene						3													2.66	15.7			0.6		
4-Chloraniline							7																		
Pentachlorophenol																									
Benzo(k)fluoranthene																									
Dibenzo(a,h)anthrcene																									
Dimethylphtalate																									
Carbazole							1.1	0.6																	
4- Methylphenol																1									
Atrazine													0.5												
Acenaphthylene																				4.83					
N-Nitrosodiphenylamine (1)																									
Caprolactam								0.6								7	3.5						4		
Benzaldehyde																							0.7		
Aniline									8.92	6.31									6.02	11.1					
2-Picoline										6.38										11.2					
Total SVOC's	39.6	4.1	4	0	0	43	8.1	3.2	30.5	21.01	7.8	0	4.5	0	0	20.4	6.7	0	53	251.2	75	12.1	13.9	0	0

Wade ABM
O and M Sampling Results
Semi-Volatiles

Compound detected	MW-7S					MW-7D					MW-8				
LEVEL (ug/L)	2004	2005	2006	2007	2008*	2004	2005	2006	2007	2008*	2004	2005	2006	2007	2008*
SVOC's															
Fluorene	3	3	2	3.4							0.8		0.6		
Acenaphthene	9	13	8	11.8	5.14	0.5					4	3.3	3	6.93	4.63
2-Methylnaphthalene															
Di-n-Butylphthalate	0.6		1					2			0.7		1		
Fluoranthene	2	1.8	1	3.25	3.1		1.9				0.7		0.8	3.37	3.61
Pyrene	2	3.6	2	8.18	5.54	0.7	3.8				1	1	1	7.82	6.44
bis(2-Ethylhexyl)Phthalate	6		8		77.6	1		2			91		1		
Phenol	2														
Naphthalene											1	1.2			
1,3-Dichlorobenzene															
1,4-Dichlorobenzene															
1,2-Dichlorobenzene															
Isophorone															
Diethylphthalate															
Phenanthrene	5	6.1	3	5.22	4.1	0.8	3.2				2	1.9	2	3.97	3.01
Anthracene	0.8	0.97	0.7												
Chrysene															
Benzo(a)anthracene															
Benzo(b)fluoranthene															
Benzo(a)pyrene															
Indeno(1,2,3-cd)pyrene															
Benzo(g,h,i)perylene															
4-Chloraniline															
Pentachlorophenol															
Benzo(k)fluoranthene															
Dibenzo(a,h)anthrcene															
Dimethylphtalate															
Carbazole															
4- Methylphenol															
Atrazine															
Acenaphthylene															
N-Nitrosodiphenylamine (1)															
Caprolactam													0.8		
Benzaldehyde															
Aniline				6.02										17.1	11
2-Picoline															11.2
Total SVOC's	30.4	28.5	25.7	37.9	95.48	3	8.9	4	0	0	101.2	7.4	10.2	39.2	39.89

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Semi Volatile Organic Compounds (SVOA1)

CAS Number	*Analyte (Test) Description*
100016	4-Nitroaniline
100027	4-Nitrophenol
100516	Benzyl alcohol
100754	N-Nitrosopiperidine
101553	4-Bromophenyl-phenyl ether
1024573	Heptachlor Epoxide
105679	2,4-Dimethylphenol
10595956	N-Nitrosomethlyethylamine
106467	1,4-Dichlorobenzene
106478	4-Chloroaniline
108601	bis(2-Chloroisopropyl)ether
108952	Phenol
109068	2-Picoline (2-Methylpyridine)
110861	Pyridine
111444	bis(2-Chloroethyl)ether
111911	bis(2-Chloroethoxy)methane
117817	bis(2-Ethylhexyl)phthalate
117840	Di-n-octylphthalate
118741	Hexachlorobenzene
120127	Anthracene
120581	Isosafrole
120821	1,2,4-Trichlorobenzene
120832	2;4-Dichlorophenol
121142	2,4-Dinitrotoluene
122394	Diphenylamine & N-nitroosdiphenylamine
126681	O,O,O-Triethylphosphorothioate
129000	Pyrene
130154	1,4-Naphthoquinone
131113	Dimethylphthalate
1319773	3&4-Methylphenol
132649	Dibenzofuran
140578	Aramite
1888717	Hexachloropropene
191242	Benzo(g,h,i)perylene
193395	Indeno-1,2,3-cd-pyrene
205992	Benzo(b)fluoranthene
206440	Fluoranthene
207089	Benzo(k)fluoranthene
208968	Acenaphthylene
218019	Chrysene
2303164	Diallate (Cis or Trans)
23950585	Pronamide
297972	Thionazine
298022	Phorate
298044	Disulfoton
309002	Aldrin
319846	alpha-BHC

319857	beta-BHC
319868	delta-BHC
33213659	Endosulfan II
333415	Diazinon
3689245	Tetraethyl dithiopyrophosphate
465736	Isodrin
50293	4,4'-DDT
50328	Benzo(a)pyrene
510156	Chlorobenzilate
51285	2,4-Dinitrophenol
534521	4,6-Dinitro-2-methylphenol
53703	Dibenzo(a,h)anthracene
53963	2-Acetylaminofluorene
541731	1,3-Dichlorobenzene
55185	N-Nitrosodiethylamine
56382	Ethyl Parathion
56495	3-Methylcholanthrene
56553	Benz(a)anthracene
57976	7,12-Dimethylbenz(a)-anthracene
58899	gamma-BHC (Lindane)
58902	2,3,4,6-Tetrachlorophenol
59507	4-Chlor-3-methylphenol
59892	N-Nitrosomorpholine
60117	Dimethylaminoazobenzene
60515	Dimethoate
60571	Dieldrin
606202	2,6-Dinitrotoluene
608935	Pentachlorobenzene
621647	N-Nitrosodipropylamine
62500	Ethyl methanesulfonate
62533	Aniline
62759	N-Nitrosodimethylamine
66273	Methyl Methanesulfonate
67721	Hexachloroethane
7005723	4-Chlorophenyl-phenyl ether
72208	Endrin
72435	Methoxychlor
72548	4,4'-DDD
72559	4,4'-DDE
76017	Pentachloroethane
76448	Heptachlor
77474	Hexachlorocyclopentadiene
78591	Isophorone
82688	Pentachloronitrobenzene
83329	Acenaphthene
84662	Diethylphthalate
84742	Di-n-butylphthalate
85018	Phenanthrene
85687	Butylbenzylphthalate

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Semi Volatile Organic Compounds (SVOA1)

86737	Fluorene
87650	2,6-Dichlorophenol
87683	Hexachlorobutadiene
87865	Pentachlorophenol
88062	2,4,6-Trichlorophenol
88744	2-Nitroaniline
88755	2-Nitrophenol
88857	Dinoseb
91203	Naphthalene
91576	2-Methylnaphthalene
91587	2-Chloronaphthalene
91941	3,3'-Dichlorobenzidine
924163	N-Nitrosodibutylamine
92671	4-Aminobiphenyl
930552	N-Nitrosopyrrolidine
94597	Safrole
95487	2-Methylphenol
95501	1,2-Dichlorobenzene
95534	o-Toluidine
95578	2-Chlorophenol
95943	1,2,4,5-Tetrachlorobenzene
95954	2,4,5-Trichlorophenol
959988	Endosulfan I
98862	Acetophenone
98953	Nitrobenzene
99092	3-Nitroaniline
99558	5-Nitro-o-toluidine
99650	1,3-Dinitrobenzene

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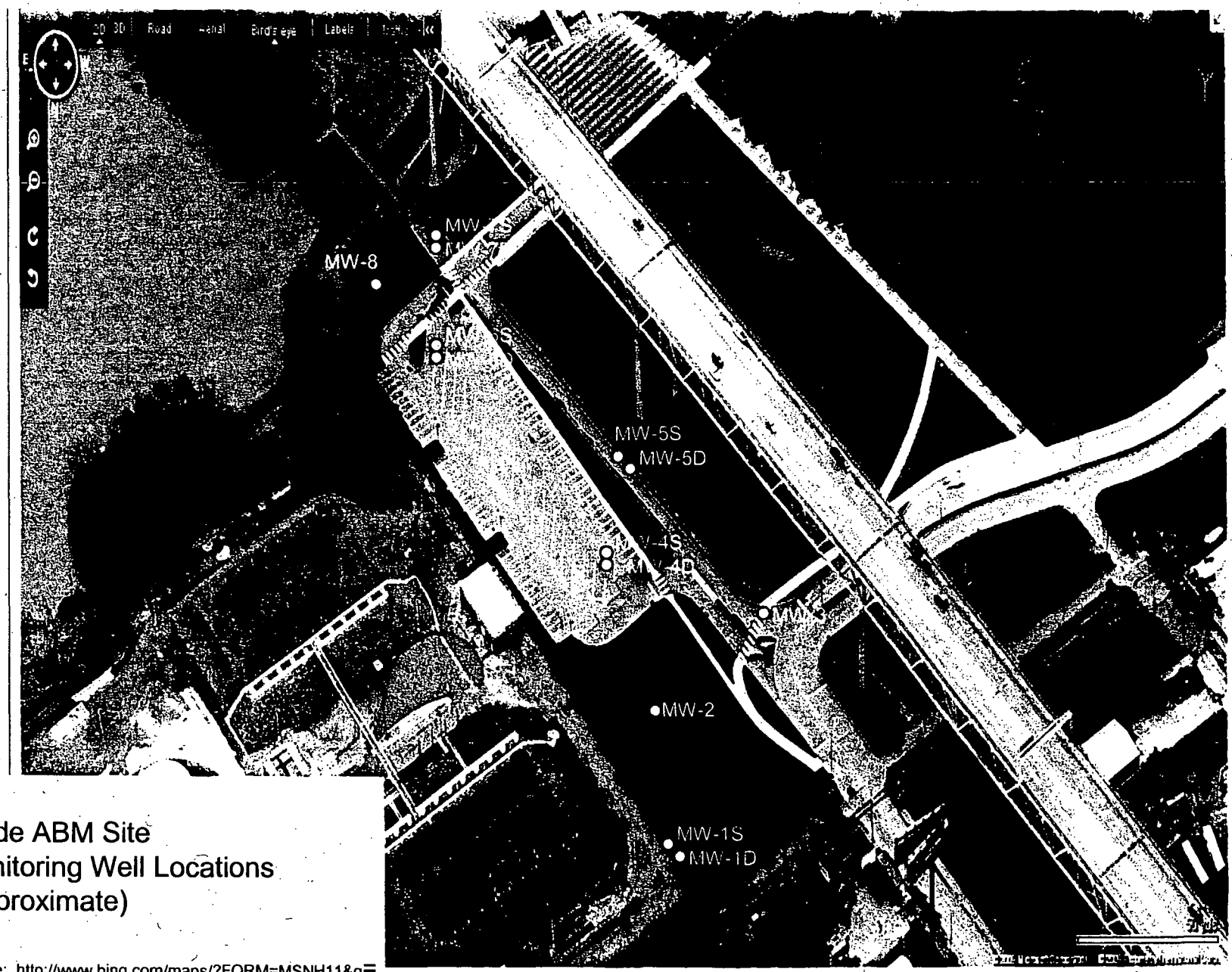
Volatile Organic Compounds (VOA1)

CAS Number	*Analyte (Test) Description*
100414	Ethylbenzene
100425	Styrene
10061015	cis-1,3-Dichloropropene
10061026	trans-1,3-Dichloropropene
103651	n-Propylbenzene
104518	n-Butylbenzene
106434	p-Chlorotoluene
106467	1,4-Dichlorobenzene
106934	1,2-Dibromoethane (EDB)
107062	1,2-Dichloroethane
108054	Vinyl Acetate
108101	4-Methyl-2-pentanone (MIBK)
108383	m/p-Xylene
108678	1,3,5-Trimethylbenzene
108861	Bromobenzene
108883	Toluene
108907	Chlorobenzene
109999	Tetrahydrofuran
120821	1,2,4-Trichlorobenzene
124481	Dibromochloromethane
127184	Tetrachloroethene
135988	(1-Methylpropyl)benzene
142289	1,3-Dichloropropane
156592	cis-1,2-Dichloroethene
156605	trans-1,2-Dichloroethene
1634044	2-Methoxy-2-methyl propane (MTBE)
540885	tert-Butyl Acetate
541731	1,3-Dichlorobenzene
56235	Carbon Tetrachloride
563586	1,1-Dichloropropene
591786	2-Hexanone
594207	2,2-Dichloropropane
630206	1,1,1,2-Tetrachloroethane
67641	Acetone
67663	Chloroform
71432	Benzene
71556	1,1,1-Trichloroethane
74839	Bromomethane
74873	Chloromethane
74953	Dibromomethane
75003	Chloroethane
75014	Chloroethene (vinyl chloride)
75092	Dichloromethane
75150	Carbon Disulfide
75252	Bromoform
75274	Bromodichloromethane
75343	1,1-Dichloroethane

Department of Environmental Protection Bureau of Laboratories
Volatile Organic Compounds (VOA1)

75354	1,1-Dichloroethene
75650	t-Butyl Alcohol
75694	Trichlorofluoromethane
75718	Dichlorodifluoromethane
78875	1,2-Dichloropropane
78933	2-Butanone (MEK)
79005	1,1,2-Trichloroethane
79016	Trichloroethene
79345	1,1,2,2-Tetrachloroethane
87616	1,2,3-Trichlorobenzene
87683	Hexachlorobutadiene
91203	Napthalene
95476	O-Xylene
95498	o-Chlorotoluene
95501	1,2-Dichlorobenzene
95636	1,2,4-Trimethlybenzene
96128	1,2-Dibromo-3-chloropropane (DBCP)
96184	1,2,3-Trichloropropane
98066	(1,1-Dimethylethyl)benzene
98566	1-Chloro-4-(trifluoromethyl)benzene
98828	(1-Methylethyl)benzene
99876	4-Isopropyltoluene



Wade ABM Site
Monitoring Well Locations
(Approximate)

Source: http://www.bing.com/maps/?FORM=MSNH11&q=